

REMARKS

As a preliminary matter, applicant submits that the final rejection was not proper under MPEP 706.07(a) because it includes a rejection based on newly cited art of claim 10 that was not amended by the applicant in the previous response. As such, applicant respectfully requests the **withdrawal of the finality of the rejection**.

Furthermore, applicant appreciates the Examiner's acknowledgement and initialized copy of the PTO-1449 form references that were mailed to the PTO on February 15, 2002 and February 9, 2004. **However, in the Office Action mailed on April 22, 2004, the Examiner did not attach an initialized copy of the PTO-1449 form references that were mailed to the PTO on April 24, 2003**. As such, Applicant respectfully requests that the Examiner indicate that these references have been considered and made of record.

Office Action Rejections Summary

Claims 1, 2-15, 17-19, 22-25, 28, 30, 33, 34, 37, 38, 40-48 and 50-52 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,753,921 of Trauernicht et al. ("Trauernicht").

Claims 12, 16, 17, 20, 26, 27, 29, 31, 35, 36, and 49 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Trauernicht in view of U.S. Patent Publication No. 2003/0015665 of Suzuki et al. ("Suzuki").

Status of Claims

Claims 1-20, 22-31 and 33-65 are pending in the application. Claims 1, 10, 22, 27, 33, 36, 51 and 52 have been amended to more properly define preexisting claim limitations. The amended claims are supported by the specification. Claims 53-65 have been added. The new claims are supported by the specification. No new matter has been added.

Claim Rejections

Claim 1 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht. Applicant respectfully submits that claim 1 is patentable over the cited reference. Claim 1 as amended recites:

A digital radiography imager, comprising:
a single energy detection layer; and
an x-ray converting layer disposed above the single energy detection layer, wherein the single energy detection layer is coupled to receive light from the x-ray converting layer, wherein the x-ray converting layer has a first surface adjacent to the single energy detection layer and a second surface on an opposite side to that of the first surface and wherein the digital radiography imager is configured such that **x-rays traverse the single energy detection layer before propagating through the x-ray converting layer.**

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device**, as recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

(Office Action, 4/22/04, p. 3) (emphasis added).

Applicant respectfully disagrees with the Office Action's characterization of Trauernicht. Trauernicht discloses "the x-ray beam could propagate from a direction such that it will first be incident on the support unit 16 rather than the converter unit 12" (col. 4, lines 10-13). It is submitted that such a disclosure does not support the conclusion reached in the Office Action and that such a conclusion is inapposite. It is submitted that in order to serve as an anticipating reference, the reference must enable that which it is asserted to anticipate. A claimed invention cannot be anticipated by a prior art reference if the allegedly anticipatory disclosures cited as prior art are not enabled. Elan

Pharmaceuticals, Inc. v. Mayo Foundation for Medical Education and Research, 346 F.3d 1051, 1054 (Fed. Cir. 2003).

First, the stated “support unit 16” is not shown in figure 1 (or any other figure) of Trauernicht, nor discussed in other portions of the specification of Trauernicht. As such, the location of support unit 16 relative to the other detectors layers is unknown. Under Elan Pharmaceuticals, enablement requires that the prior art reference must teach one of ordinary skill in the art to make or carry out the claimed invention without undue experimentation. It is submitted that one of ordinary skill in the art would not be able to make a detector with a support unit 16 without knowing its position or structural relationship with respect to the other layers of the detector.

Moreover, Trauernicht teaches a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col. 5, line 5). As such, Trauernicht teaches away from the office action’s purported irradiation of the imager from the back of the device.

Furthermore, the purported invention of Trauernicht is directed to an improved detector that controls the emissions of secondary x-rays by maintaining a “concentration of heavier elements in the substrate 22” (Trauernicht, col. 6, lines 28-34 and col. 2, lines 26-27). Heavier elements have higher x-ray absorption of both primary x-rays and secondary x-rays. If the patentee of Trauernicht intended to describe the purported invention as being capable of propagating x-rays through a “heavy” and absorptive substrate 22 prior to propagating through the converter unit 12, as purported in the Office Action, then such configuration would degrade the quality of the final image due to the absorption of primary x-rays in the substrate 22 before they reach the converter unit 12. This degradation would obstruct the goal of actually improving the quality of the final

image. Additionally, any suggestion to use such a configuration would fail to set forth the desirability of such configuration. See, MPEP 2143.01. Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of Trauernicht in the manner purported by the Office Action because Trauernicht teaches away from a device in which x-rays traverse the detection array 14 before propagating through converter 12. It is respectfully submitted that nothing in Trauernicht teaches or suggests that **x-rays traverse the single energy detection layer before propagating through the x-ray converting layer.**

In contrast, claim 1 includes the limitation of “x-rays traverse the single energy detection layer before propagating through the x-ray converting layer.” Therefore, applicant respectfully submits that claim 1 is patentable over the cited reference. Given that claims 2-9 depend from claim 1, applicant respectfully submits that claims 2-9 are also patentable over the cited reference.

Claim 10 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht. Applicant respectfully submits that claim 10 is patentable over the cited reference. Claim 10 as amended recites:

A flat panel imager, comprising:
a photodiode layer;
a light transparent layer disposed above the photodiode layer; and
a scintillator layer disposed above the light transparent layer, wherein the scintillator layer has a first surface adjacent to the light transparent layer and a second surface on an opposite side to that of the first surface, and wherein the flat panel imager is configured such that **x-rays traverse the photodiode layer before propagating through the scintillator layer.**

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device, as**

recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

(Office Action, 4/22/04, p. 3) (emphasis added).

Applicant respectfully submits that Trauernicht does not disclose, teach, or suggest the limitation that “x-rays traverse the photodiode layer before propagating through the scintillator layer. In particular, applicant submits that Trauernicht is not enabling with regard to the stated limitation and, therefore, cannot serve as an anticipatory reference. Elan Pharmaceuticals.

Moreover, Trauernicht teaches a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col. 5, line 5). As such, Trauernicht teaches away from the office action’s purported irradiation of the imager from the back of the device. Furthermore, applicant submits that Trauernicht teaches away from the position asserted in the Office Action because of the absorptive effect that the heavy substrate would have on the propagating x-rays and the degrading effects that would result on the final image. Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of Trauernicht in the manner purported by the Office Action. It is respectfully submitted that nothing in Trauernicht teaches or suggests that **x-rays traverse the photodiode layer before propagating through the scintillator layer**.

In contrast, claim 10 includes the limitation of “x-rays traverse the photodiode layer before propagating through the scintillator layer.” Therefore, applicant respectfully submits that claim 10 is patentable over the cited reference. Given that claims 11-20 depend from claim 10, applicant respectfully submits that claims 11-20 are also patentable over the cited reference.

Claim 22 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht. Applicant respectfully submits that claim 22 is patentable over the cited reference. Claim 22, as amended, recites:

A flat panel imager, comprising:

a semiconductor layer disposed above a charge-collection layer; and
a bias electrode layer disposed above the semiconductor layer, the bias electrode to generate an electric field within the semiconductor layer, wherein the semiconductor layer has a first surface adjacent to the charge-collection layer and a second surface adjacent to the bias electrode, and wherein the flat panel imager is configured such that **x-rays traverse the charge-collection layer before propagating through the semiconductor layer**, wherein electric charges drawn across the semiconductor layer are greater near the first surface of the semiconductor layer adjacent to the charge-collection layer relative to the second surface of the semiconductor layer.

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device**, as recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

(Office Action, 4/22/04, p. 3) (emphasis added).

Applicant respectfully submits that Trauernicht does not disclose, teach, or suggest the limitation that “x-rays traverse the charge-collection layer before propagating through the semiconductor layer.” In particular, applicant submits that Trauernicht is not enabling with regard to the stated limitation and, therefore, cannot serve as an anticipatory reference. Elan Pharmaceuticals.

Moreover, Trauernicht teaches a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col.

5, line 5). As such, Trauernicht teaches away from the office action's purported irradiation of the imager from the back of the device. Furthermore, applicant submits that Trauernicht teaches away from the position asserted in the Office Action because of the absorptive effect that the heavy substrate would have on the propagating x-rays and the degrading effects that would result on the final image. Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of Trauernicht in the manner purported by the Office Action. It is respectfully submitted that nothing in Trauernicht teaches or suggests that **x-rays traverse the charge-collection layer before propagating through the semiconductor layer.**

In contrast, claim 22 includes the limitation of "x-rays traverse the charge-collection layer before propagating through the semiconductor layer." Therefore, applicant respectfully submits that claim 22 is patentable over the cited reference. Given that claims 23-26 depend from claim 22, applicant respectfully submits that claims 23-26 are also patentable over the cited reference.

Claim 27 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht in view of Suzuki. Applicant respectfully submits that claim 27 is patentable over the cited reference. Claim 27, as amended, recites:

A digital radiography system, comprising:
an x-ray source to transmit x-rays;
a flat panel imager to receive the x-rays and to produce a digitized image,
comprising:
a photodiode layer;
a light transparent layer disposed above the photodiode layer;
a scintillator layer disposed above the light transparent layer; and
a mirror layer disposed above the scintillator layer; and
a display system connected to the flat panel imager, the display system to display the digitized image, wherein **the scintillator layer has a first surface adjacent to the light transparent layer and a second surface adjacent to the mirror layer**, and wherein the flat panel imager is configured such that **x-rays traverse the photodiode layer before propagating through the scintillator layer.**

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device**, as recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

(Office Action, 4/22/04, p. 3) (emphasis added). The Office Action also states:

Trauernicht (921) as applied above fails to teach . . . (c) The use of a mirror layer, as recited in Claims 17, 27, and 49;
However, Suzuki (665) discloses . . . (c) the use of a reflective layer, as recited in Claims 17, 27, and 49. See Column Paragraph [0032];

(Office Action, 4/22/04, p. 4).

Applicant respectfully submits that Trauernicht and Suzuki do not disclose, teach, or suggest the limitation that “x-rays traverse the photodiode layer before propagating through the scintillator layer.” In particular, applicant submits that Trauernicht is not enabling with regard to the stated limitation and, therefore, cannot serve as an anticipatory reference. Elan Pharmaceuticals.

Moreover, Trauernicht teaches a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col. 5, line 5). As such, Trauernicht teaches away from the office action’s purported irradiation of the imager from the back of the device. Furthermore, applicant submits that Trauernicht teaches away from the position asserted in the Office Action because of the absorptive effect that the heavy substrate would have on the propagating x-rays and the degrading effects that would result on the final image.

The Office Action does not assert that Suzuki teaches the limitation that “x-rays traverse the photodiode layer before propagating through the scintillator layer.” In fact, Suzuki only teaches propagating x-rays through a scintillator 2 prior to detecting light at the light receiving elements 12. (Suzuki, Figure 12). Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of either Trauernicht or Suzuki in the manner purported by the Office Action.

Furthermore, applicant respectfully submits that Suzuki does not disclose, teach or suggest the limitation that “the scintillating layer has . . . a second surface adjacent to the mirror layer” (the Office Action acknowledges that “Trauernicht . . . fails to teach . . . [t]he use of a mirror”). Although the Office Action fails to specify which structure allegedly anticipates the mirror layer, applicant submits that Suzuki actually teaches away from a device in which a reflective plate 4 or a reflective film 42 is adjacent to a surface of the scintillator 2. Rather, Suzuki teaches “[a] reflective plate 4 . . . with a reflective film 42 is placed on the protective film 3,” which is interposed between the reflective film 42 and the scintillator 2. (Suzuki, paragraph [0032]). The interposed protective film 3 prohibits either the reflective film 42 or the reflective plate 4 from being adjacent to a surface of the scintillator 2. Therefore, nothing in Suzuki teaches or suggests that the scintillating layer has a second surface adjacent to the mirror layer.

It is respectfully submitted that neither Trauernicht nor Suzuki, either alone or in combination with one another, teaches or suggests that **x-rays traverse the photodiode layer before propagating through the scintillator layer**. It is also submitted that neither Trauernicht nor Suzuki, either alone or in combination with one another, teaches or suggests that **the scintillating layer has . . . a second surface adjacent to the mirror layer**.

In contrast, claim 27 includes the limitations of “x-rays traverse the charge-collection layer before propagating through the semiconductor layer” and “the scintillating layer has . . . a second surface adjacent to the mirror layer.” Therefore,

applicant respectfully submits that claim 27 is patentable over the cited references. Given that claims 28-31 depend from claim 27, applicant respectfully submits that claims 28-31 are also patentable over the cited references.

Claim 36 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht in view of Suzuki. Applicant respectfully submits that claim 36 is patentable over the cited reference. Claim 36, as amended, recites:

A digital radiography system, comprising:
an x-ray source to transmit x-rays;
a flat panel imager to receive the x-rays and to produce a digitized image,
comprising:
a semiconductor layer disposed above a charge-collection layer;
a bias electrode layer disposed above the semiconductor layer, the
bias electrode to generate an electric field within the semiconductor layer;
and
a casing that holds the flat panel imager together, wherein the
casing forms an aperture window to receive the x-rays; and
a display system connected to the flat panel imager, the display system to
display the digitized image, wherein the semiconductor layer has a first surface
adjacent to the charge-collection layer and a second surface adjacent to the bias
electrode, and wherein the flat panel imager is configured such that **x-rays
traverse the charge-collection layer before propagating through the
semiconductor layer.**

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device**, as recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

(Office Action, 4/22/04, p. 3) (emphasis added).

The Office Action also states:

Trauernicht (921) as applied above fails to teach . . . d) The use of a casing to hold the imager together, as recited in Claims 20, 26, 31, and 36.

However, Suzuki (665) discloses . . . (d) The use of a frame to hold the device together, as recited in Claims 20, 26, 31, and 36. See Paragraph [0033].

(Office Action, 4/22/04, p. 4).

Applicant respectfully submits that Trauernicht and Suzuki do not disclose, teach, or suggest the limitation that “x-rays traverse the charge-collection layer before propagating through the semiconductor layer.” In particular, applicant submits that Trauernicht is not enabling with regard to the stated limitation and, therefore, cannot serve as an anticipatory reference. Elan Pharmaceuticals. Moreover, Trauernicht teaches a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col. 5, line 5). As such, Trauernicht teaches away from the office action’s purported irradiation of the imager from the back of the device. Furthermore, applicant submits that Trauernicht teaches away from the position asserted in the Office Action because of the absorptive effect that the heavy substrate would have on the propagating x-rays and the degrading effects that would result on the final image.

The Office Action does not assert that Suzuki teaches the limitation that “x-rays traverse the charge-collection layer before propagating through the semiconductor layer.” In fact, Suzuki only teaches propagating x-rays through a scintillator 2 prior to detecting light at the light receiving elements 12. (Suzuki, Figure 12). Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of either Trauernicht or Suzuki in the manner purported by the Office Action.

Furthermore, applicant respectfully submits that Suzuki does not disclose, teach or suggest the limitation that “a casing that holds the flat panel imager together” (the Office Action acknowledges that “Trauernicht . . . fails to teach . . . [t]he use of a casing”). However, it is unnecessary to address this issue because both Trauernicht and Suzuki,

either alone or in combination with one another, fail to teach or suggest that **x-rays traverse the charge-collection layer before propagating through the semiconductor layer.**

In contrast, claim 36 includes the limitation of “x-rays traverse the charge-collection layer before propagating through the semiconductor layer.” Therefore, applicant respectfully submits that claim 36 is patentable over the cited references. Given that claims 33-35 depend from claim 36, applicant respectfully submits that claims 33-35 are also patentable over the cited references.

Claim 37 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht. Applicant respectfully submits that claim 37 is patentable over the cited reference. Claim 37 recites:

An imaging method, comprising:
transmitting x-rays through a single photosensitive device layer; and
receiving the **x-rays incident on a scintillator layer after the transmission through the single photosensitive device layer.**

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device**, as recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

(Office Action, 4/22/04, p. 3) (emphasis added).

Applicant respectfully submits that Trauernicht does not disclose, teach, or suggest the limitation that “x-rays incident on a scintillator layer after the transmission through the single photosensitive device layer.” In particular, applicant submits that Trauernicht is not enabling with regard to the stated limitation and, therefore, cannot serve as an anticipatory reference. Elan Pharmaceuticals. Moreover, Trauernicht teaches

a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col. 5, line 5). As such, Trauernicht teaches away from the office action's purported irradiation of the imager from the back of the device. Furthermore, applicant submits that Trauernicht teaches away from the position asserted in the Office Action because of the absorptive effect that the heavy substrate would have on the propagating x-rays and the degrading effects that would result on the final image. Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of Trauernicht in the manner purported by the Office Action. It is respectfully submitted that nothing in Trauernicht teaches or suggests that **x-rays incident on a scintillator layer after the transmission through the single photosensitive device layer**.

In contrast, claim 37 includes the limitation of "x-rays incident on a scintillator layer after the transmission through the single photosensitive device layer." Therefore, applicant respectfully submits that claim 37 is patentable over the cited reference. Given that claims 38-43 depend from claim 37, applicant respectfully submits that claims 38-43 are also patentable over the cited reference.

Claim 44 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht. Applicant respectfully submits that claim 44 is patentable over the cited reference. Claim 44 recites:

An imaging method, comprising:
transmitting x-rays through a single charge collection-layer; and
receiving the **x-rays incident on a semiconductor layer after the transmission through the single charge-collection layer**.

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device**, as recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

Trauernicht (921) also discloses . . . (b) The use of a **photoconductive conversion layer** to produce electrical charges across the semiconductor layer, along with electrodes, as recited in Claims 5-9, 17-19, 23-25, and 44-48. See Column 16, line 36-56.

(Office Action, 4/22/04, p. 3)(emphasis added).

Applicant respectfully submits that Trauernicht does not disclose, teach, or suggest the limitation that “x-rays incident on a semiconductor layer after the transmission through the single charge-collection layer.” In particular, applicant submits that Trauernicht is not enabling with regard to the stated limitation and, therefore, cannot serve as an anticipatory reference. Elan Pharmaceuticals. Moreover, Trauernicht teaches a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col. 5, line 5). As such, Trauernicht teaches away from the office action’s purported irradiation of the imager from the back of the device. Furthermore, applicant submits that Trauernicht teaches away from the position asserted in the Office Action because of the absorptive effect that the heavy substrate would have on the propagating x-rays and the degrading effects that would result on the final image. Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of Trauernicht in the manner purported by the Office Action. It is respectfully submitted that nothing in Trauernicht teaches or suggests **x-rays incident on a semiconductor layer after the transmission through the single charge-collection layer**.

Furthermore, applicant respectfully submits that the Trauernicht does not disclose, teach or suggest the other limitations recited in claim 44. The Office Action states that

Trauernicht discloses “[t]he use of a **photoconductive conversion layer** to produce electrical charges across the semiconductor layer, along with electrodes.” However, it is not apparent how this assertion relates to claim 44 because claim 44 does not contain any limitations to a photoconductive conversion layer. Nevertheless, it is unnecessary to address this issue because Trauernicht fails to teach or suggest **x-rays incident on a semiconductor layer after the transmission through the single charge-collection layer**.

In contrast, claim 44 includes the limitation of “x-rays incident on a semiconductor layer after the transmission through the single charge-collection layer.” Therefore, applicant respectfully submits that claim 44 is patentable over the cited reference. Given that claims 45-50 depend from claim 44, applicant respectfully submits that claims 45-50 are also patentable over the cited reference.

Claim 51 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht. Applicant respectfully submits that claim 51 is patentable over the cited reference. Claim 51 as amended recites:

A digital radiography imager, comprising:
an energy detection layer;
an x-ray converting layer coupled to the energy detection layer; and
a single energy detection/x-ray converting interface in the imager, wherein the x-ray converting layer has a first surface adjacent to the energy detection layer and a second surface on an opposite side to that of the first surface and wherein the digital radiography imager is configured such that **x-rays traverse the energy detection layer and the single energy detection/x-ray converting interface before propagating through the x-ray converting layer**.

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device**, as

recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

(Office Action, 4/22/04, p. 3)(emphasis added).

Applicant respectfully submits that Trauernicht does not disclose, teach, or suggest the limitation that “x-rays traverse the energy detection layer and the single energy detection/x-ray converting interface before propagating through the x-ray converting layer.” In particular, applicant submits that Trauernicht is not enabling with regard to the stated limitation and, therefore, cannot serve as an anticipatory reference. Elan Pharmaceuticals. Moreover, Trauernicht teaches a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col. 5, line 5). As such, Trauernicht teaches away from the office action’s purported irradiation of the imager from the back of the device. Furthermore, applicant submits that Trauernicht teaches away from the position asserted in the Office Action because of the absorptive effect that the heavy substrate would have on the propagating x-rays and the degrading effects that would result on the final image. Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of Trauernicht in the manner purported by the Office Action. It is respectfully submitted that nothing in Trauernicht teaches or suggests that **x-rays traverse the energy detection layer and the single energy detection/x-ray converting interface before propagating through the x-ray converting layer.**

In contrast, claim 51 includes the limitation of “x-rays traverse the energy detection layer and the single energy detection/x-ray converting interface before propagating through the x-ray converting layer.” Therefore, applicant respectfully submits that claim 51 is patentable over the cited reference.

Claim 52 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Trauernicht. Applicant respectfully submits that claim 52 is patentable over the cited reference. Claim 52, as amended, recites:

A method, comprising:
receiving x-rays in a scintillator layer; and
transmitting the **x-rays through a photosensitive device before the x-rays are received in any scintillator layer.**

(emphasis added).

The Office Action states:

Trauernicht (921) discloses an imaging device having an x-ray conversion layer that generates light, which is detected by a single adjacent detection layer, and **can be irradiated from the front or back of the device**, as recited in Claims 1, 10, 22, 37, 38, 40-43, and 50-52. See Column 3, line 65-67; Column 4, line 1-42; and Column 9, line 1-10.

(Office Action, 4/22/04, p. 3)(emphasis added).

Applicant respectfully submits that Trauernicht does not disclose, teach, or suggest the limitation that “x-rays through a photosensitive device before the x-rays are received in any scintillator layer.” In particular, applicant submits that Trauernicht is not enabling with regard to the stated limitation and, therefore, cannot serve as an anticipatory reference. Elan Pharmaceuticals. Moreover, Trauernicht teaches a support unit 20 directly under detection array 14 that reflects back some x-rays that can then be detected by detection array 14. This could not happen if the x-rays went through the detection array 14 and then through the converter 12. In addition, backing 24, which is disposed on support unit 20, blocks further propagation of x-rays through the entire device. (Trauernicht, col. 4, line 43 to col. 5, line 5). As such, Trauernicht teaches away from the office action’s purported irradiation of the imager from the back of the device. Furthermore, applicant submits that Trauernicht teaches away from the position asserted in the Office Action because of the absorptive effect that the heavy substrate would have on the propagating x-rays and the degrading effects that would result on the final image.

Therefore, one of ordinary skill in the art would not be motivated to modify the teachings of Trauernicht in the manner purported by the Office Action. It is respectfully submitted that nothing in Trauernicht teaches or suggests **x-rays through a photosensitive device before the x-rays are received in any scintillator layer.**

In contrast, claim 52 includes the limitation of “x-rays through a photosensitive device before the x-rays are received in any scintillator layer.” Therefore, applicant respectfully submits that claim 52 is patentable over the cited reference.

New Claims

Applicant respectfully submits that new claim 53 is patentable over Trauernicht and Suzuki. Claim 53 recites:

A digital radiography imager, comprising:
an energy detection layer; and
a substrate comprising an x-ray converting layer, the substrate coupled to the energy detection layer, wherein the energy detection layer is coupled to receive light from the x-ray converting layer, wherein the digital radiography imager is configured such that **x-rays traverse the energy detection layer before propagating through the substrate comprising the x-ray converting layer.**

(emphasis added).

Trauernicht discloses a detection array 14 interposed between a converter 12 and a substrate 22. (Trauernicht, Figures 1-3; col. 4, lines 18-56). In order for x-rays to transmit through the detection array 14 the x-rays must first pass through the converter 12. Assuming, for the sake of argument, a detector configuration purported in the Office Action, the x-rays would have to first pass through the substrate 22 before transmitting through the detection array 14. Either way, the x-rays would be received in the converter 12 or the substrate 22 before the x-rays traverse the detection array 14. Similarly, Suzuki discloses light receiving elements 12 interposed between a scintillator 2 and a substrate 11. (Suzuki, Figures 1, 4-7, 9, 11-13; paragraphs 26-27). Suzuki only discloses

propagating x-rays incident on the scintillator 2 first. Any x-rays transmitting through the light receiving elements 12 must first be received in the scintillator 2.

In contrast, claim 53 includes the limitation of “x-rays traverse the energy detection layer before propagating through the substrate comprising the x-ray converting layer.” Therefore, applicant respectfully submits that claim 53 is patentable over the cited references. Given that claims 54-58 depend from claim 53, applicant respectfully submits that claims 54-58 are also patentable over the cited references.

Applicant respectfully submits that new claim 59 is patentable over Trauernicht and Suzuki. Claim 59 recites:

A method, comprising:
providing a substrate;
receiving x-rays in an x-ray converting layer; and
transmitting the **x-rays through an energy detection layer before the x-rays are received in the x-ray converting layer and before the x-rays are received in the substrate.**

(emphasis added).

Trauernicht discloses a detection array 14 interposed between a converter 12 and a substrate 22. (Trauernicht, Figures 1-3; col. 4, lines 18-56). In order for x-rays to transmit through the detection array 14 the x-rays must first pass through the converter 12. Assuming, for the sake of argument, a detector configuration purported in the Office Action, the x-rays would have to first pass through the substrate 22 before transmitting through the detection array 14. Either way, the x-rays would be received in the converter 12 or the substrate 22 before the x-rays traverse the detection array 14. Similarly, Suzuki discloses light receiving elements 12 interposed between a scintillator 2 and a substrate 11. (Suzuki, Figures 1, 4-7, 9, 11-13; paragraphs 26-27). Suzuki only discloses propagating x-rays incident on the scintillator 2 first. Any x-rays transmitting through the light receiving elements 12 must first be received in the scintillator 2.

In contrast, claim 59 includes the limitation of “x-rays through an energy detection layer before the x-rays are received in the x-ray converting layer and before the x-rays are received in the substrate.” Therefore, applicant respectfully submits that claim 59 is patentable over the cited references. Given that claims 60-65 depend from claim 59, applicant respectfully submits that claims 60-65 are also patentable over the cited references.

CONCLUSION

In conclusion, applicants respectfully submit that in view of the remarks set forth herein, the applicable rejections have been overcome.


If the Examiner believes a telephone interview would expedite the prosecution of this application, the Examiner is invited to contact Daniel Ovanezian at (408) 720-8300.

If there are any additional charges, please charge our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 7/28, 2004


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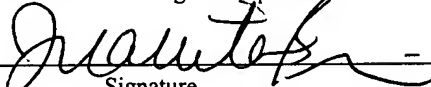
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